

CLAIMS

1 1. In an endoscopic catheter having a distally located tissue cutting device in a
2 lumen thereof comprising an exposed linear cutting member, the improvement for
3 determining the amount of cutting member deployed for cutting which comprises:

4 providing said cutting member with a plurality of radiopaque indicia located
5 at radiologically measurable intervals.

1 2. Catheter of claim 1 wherein said catheter has:

2 a radiopaque reference point to determine the length of the deployed cutting
3 member by reference to said indicia.

4 3. Catheter of claim 2 wherein the cutting member is a needle knife and said
5 radiopaque reference point is at the distal end of said catheter.

6 4. Catheter of claim 2 wherein the cutting member is a sphincterotome wire and
7 said radiopaque reference point is on said catheter proximal to said wire.

8 5. Catheter of claim 1 wherein said radiopaque indicia are referenced from a
9 middle of said cutting member and alternate along a length of said cutting member as a
10 function of the distance from said middle thereof.

11 6. In an endoscopic catheter having a distally located tissue cutting device in a
12 lumen thereof comprising an exposed linear cutting member, the improvement for
13 determining the amount of cutting member deployed for cutting which comprises:

14 providing said cutting member with a plurality of radiopaque indicia located
15 at radiologically measurable intervals; and

1 a radiopaque reference point to determine the length of the deployed cutting
2 member by reference to said indicia.

1 7. Catheter of claim 6 wherein the cutting member is a needle knife and said
2 radiopaque reference point is at the distal end of said catheter.

1 8. Catheter of claim 6 wherein the cutting member is a sphincterotome wire and
2 said radiopaque reference point is on said catheter proximal to said wire.

1 9. Catheter of claim 6 wherein said radiopaque indicia are referenced from a
2 middle of said cutting member and alternate along a length of said cutting member as a
3 function of the distance from said middle thereof.

1 10. In an endoscopic catheter having a cable actuated needle knife in a lumen
2 thereof, said needle knife being deployable from a distal end of said catheter, the
3 improvement for substantially preventing movement of said needle knife after deployment
4 which comprises one or more spaced apart detents along said cutting member which interact
5 with one or more notches in the distal end of said lumen thereby providing resistance to
6 movement.

1 11. Catheter of claim 10 wherein said detents are evenly spaced along a length
2 of the cutting member.

1 12. In an endoscopic catheter having a distally located tissue cutting device in a
2 lumen thereof comprising an exposed linear cutting member, the improvement for
3 determining the amount of cutting member deployed for cutting and for substantially
4 preventing movement of said cutting member which comprises

providing said cutting member with a plurality of radiopaque indicia located at radiologically measurable intervals and one or more spaced apart detents to interact with one or more notches in the distal end of said lumen thereby providing resistance to said movement.

13. Catheter of claim 12 wherein said catheter:
a radiopaque reference point to determine the length of the deployed cutting
member by reference to said indicia.

14. Catheter of claim 13 wherein the cutting member is a needle knife and said radiopaque reference point is at the distal end of said catheter.

15. Catheter of claim 13 wherein the cutting member is a sphincterotome wire and said radiopaque reference point is on said catheter proximal to said wire.

16. Catheter of claim 12 wherein said radiopaque indicia are referenced from a middle of said cutting member and alternate along a length of said cutting member as a function of the distance from said middle thereof.

17. In an endoscopic catheter having a distally located tissue cutting device in a lumen thereof comprising an exposed linear cutting member, the improvement for determining the amount of cutting member deployed for cutting and for substantially preventing movement of said cutting member which comprises:

providing said cutting member with a plurality of radiopaque indicia located at radiologically measurable intervals and one or more spaced apart detents to interact with one or more notches in the distal end of said lumen thereby providing resistance to said movement; and

1 a radiopaque reference point to determine the length of the deployed cutting
2 member by reference of said indicia.

1 18. Catheter of claim 17 wherein the cutting member is a needle knife and said
2 radiopaque reference point is at the distal end of said catheter.

1 19. Catheter of claim 17 wherein the cutting member is a sphincterotome wire and
2 said radiopaque reference point is on said catheter proximal to said wire.

1 20. Catheter of claim 17 wherein said radiopaque indicia are referenced from a
2 middle of said cutting member and alternate along a length of said cutting member as a
3 function of the distance from said middle thereof.

1 21. In an endoscopic catheter having a distally located tissue cutting device in a
2 lumen thereof comprising an exposed linear cutting member, the improvement for
3 determining the amount of cutting member deployed for cutting which comprises:

4 providing said cutting member with a plurality of visual indicia located at
5 visually measurable intervals.

1 22. Catheter of claim 21 wherein said catheter has:
2 a visual reference point to determine the length of the deployed cutting
3 member by reference to said indicia.

1 23. Catheter of claim 22 wherein the cutting member is a needle knife and said
2 visual reference point is at the distal end of said catheter.

1 24. Catheter of claim 22 wherein the cutting member is a sphincterotome wire and
2 said visual reference point is on said catheter proximal to said wire.

1 25. Catheter of claim 21 wherein said visual indicia are referenced from a middle
2 of said cutting member and alternate along a length of said cutting member as a function of
3 the distance from said middle thereof.

1 26. Catheter of claim 21 wherein said visual indicia include different color
2 markings.

1 27. Method for exposing a tissue cutting device located in a distal portion of a
2 lumen of an endoscope catheter which comprises:

3 providing said cutting member with a plurality of radiopaque indicia located
4 at radiologically measurable intervals along a length of said cutting member;
5 deploying said cutting member; and
6 radiologically determining the length of said cutting member deployed.

1 28. Method of claim 21 wherein said step of radiologically determining said
2 length uses a radiopaque reference point.

1 29. Method of claim 22 wherein said cutting member is a needle knife and said
2 radiopaque reference point is at the distal end of said catheter.

1 30. Method of claim 22 wherein said cutting member is a sphincterotome wire
2 and said radiopaque reference point is on said catheter proximal of said wire.

1 31. Method for exposing a tissue cutting device located in a distal portion of a
2 lumen of an endoscope catheter which comprises:

3 providing said cutting member with a plurality of radiopaque indicia located
4 at radiologically measurable intervals along a length of said cutting member and a
5 radiopaque reference point;

6 deploying said cutting member; and

7 radiologically determining the length of said cutting member which is
8 exposed.

1 32. Method of claim 25 wherein said cutting member is a needle knife and said
2 radiopaque reference point is at the distal end of said catheter.

1 33. Method of claim 25 wherein said cutting member is a sphincterotome wire
2 and said radiopaque reference point is one said catheter proximal of said wire.

1 34. Method for preventing movement of an exposed portion of a deployed cutting
2 knife located in a distal portion of a lumen of an endoscopic catheter which comprises:

3 providing said cutting member with a plurality of detents located at spaced
4 intervals;

5 providing the distal end of said catheter with a corresponding notch; and
6 engaging said notch and a detent upon deployment of said knife at a desired
7 length to prevent movement of said deployed cutting knife.